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Docket No.: 051023-0027 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of	:	Customer Number: 20277
Katsuhiro YADA	:	Confirmation Number: 4393
Application No.: 10/551,474	:	Group Art Unit: 2613
Filed: September 30, 2005	:	Examiner: Not yet assigned

For: OPTICAL COMMUNICATION SYSTEM HAVING OPTICAL AMPLIFICATION FUNCTION

REQUEST FOR CORRECTED FILING RECEIPT

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Commissioner for Patents
P.O. Box 1450
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Sir:

Attached is a copy of the Filing Receipt received from the U.S. Patent and Trademark Office in the above-referenced application. It is noted that the **total number of claims is listed incorrectly.** Attached is a copy of the claims as filed, which evidences that **the total number of claims should be 26.** It is requested that a corrected filing receipt be issued.

Respectfully submitted,

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY.DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/551,474	09/30/2005	2613	2460	051023-0027	26 ← 27		3

CONFIRMATION NO. 4393

20277
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WASHINGTON, DC 20005-3096

FILING RECEIPT

OC000000020635817

Date Mailed: 10/05/2006

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

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Power of Attorney: The patent practitioners associated with Customer Number 20277.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/JP04/04664 10/21/2004

Foreign Applications

JAPAN 2003-099570 04/02/2003
JAPAN 2003-110699 04/15/2003

Projected Publication Date: 01/04/2007

Non-Publication Request: No

Early Publication Request: No

Title

Optical communication system having optical amplification function

Preliminary Class

398

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CLAIMS:

1. An optical communications system in which a base station and a local station are connected using an optical fiber, the optical communications system being characterized in that

a wavelength of a light source for a signal that generates downstream signal light is set to a wavelength with an effect of Raman amplifying an upstream light signal that propagates through the optical fiber, and an upstream light signal transmitted between the base station and the local station is amplified in the optical fiber while the upstream light signal is propagating through the optical fiber.

2. The optical communications system according to Claim 1, wherein

a high nonlinearity fiber is used for at least part of the optical fiber.

3. The optical communications system according to Claim 1 or 2, wherein

light that is switched ON and OFF is used as the downstream signal light, and a modulation method, by which an ON state and an OFF state transit even when coded data is a sequence of 0's and the ON state and the OFF state transit even when the coded data is a sequence of 1's, is used as a modulation method for the downstream signal light.

4. The optical communication system according to Claim 3, wherein

in the backbone optical fiber, a length of a portion where upstream signal light is amplified is of a distance longer than a length of the optical fiber corresponding to a set of the ON state and the OFF state of the downstream signal light.

5. The optical communication system according to any of Claims 1 through 4, wherein

the base station is provided with an optical filter used to select a wavelength of light coming incident on a light-receiving element.

6. A PON (Passive Optical Network) system in which a base station and an optical branching station equipped with a passive optical divider are connected using a backbone optical fiber, and the optical branching station and plural local stations are connected individually using branch optical fibers, the PON system being characterized in that

a wavelength of a light source for a signal that generates downstream signal light is set to a wavelength with an effect of Raman amplifying an upstream light signal that propagates through the backbone optical fiber, and an upstream light signal transmitted between the base station and each local station is amplified in the backbone optical fiber while the

upstream light signal is propagating through the backbone optical fiber.

7. The PON system according to Claim 6, wherein

a high nonlinearity fiber is used for at least part of the backbone optical fiber.

8. The PON system according to Claim 6 or 7, wherein

light that is switched ON and OFF is used as the downstream signal light, and a modulation method, by which an ON state and an OFF state transit even when coded data is a sequence of 0's and the ON state and the OFF state transit even when coded data is a sequence of 1's, is used as a modulation method for the downstream signal light.

9. The PON system according to Claim 8, wherein

in the backbone optical fiber, a length of a portion where upstream signal light is amplified is of a distance longer than a length of the backbone optical fiber corresponding to a set of the ON state and the OFF state of the downstream signal light.

10. The PON system according to any of Claims 6 through 9, wherein

the light source for a signal and an optical multiplexer/demultiplexer are provided in the base station,

and light for a signal is pumped into the backbone optical fiber from the base station toward the optical branching station by way of the optical multiplexer/demultiplexer.

11. The PON system according to any of Claims 6 through 10, wherein

a star coupler is used as the passive optical divider.

12. The PON system according to any of Claims 6 through 10, wherein

as the passive optical divider, a star coupler is used for the downstream signal light, and an AWG (Arrayed-Waveguide Grating) capable of multiplexing and demultiplexing upstream signal light using a difference in wavelength is used for the upstream signal light.

13. A PON (Passive Optical Network) system in which a base station and an optical branching station equipped with a passive optical divider are connected using a backbone optical fiber, and the optical branching station and plural local stations are connected individually using branch optical fibers, the PON system being characterized by comprising:

a light source for amplification that generates light for amplification having a wavelength with an effect of amplifying a light signal propagating through an optical fiber

(including a backbone optical fiber and a branch optical fiber, and the same applies hereinafter); and

an optical multiplexer/demultiplexer used to pump the light for amplification into the optical fiber,

wherein, in the optical fiber, a light signal transmitted between the base station and each local station is amplified while the light signal is propagating through the optical fiber.

14. The PON system according to Claim 13, wherein

Raman amplification is used as a function of amplifying a light signal, and the light for amplification propagates in a direction opposite to the signal light.

15. The PON system according to Claim 13 or 14, wherein

a high nonlinearity fiber is used.

16. The PON system according to Claim 13, wherein

an erbium-doped fiber (EDF) is used as a function of amplifying the light signal, and the signal for amplification is in the same direction as the signal light.

17. The PON system according to Claim 13, wherein

the light source for amplification and the optical multiplexer/demultiplexer are provided in the base station,

and the light for amplification is pumped into the backbone optical fiber from the base station toward the optical branching station.

18. The PON system according to Claim 13, wherein

the light source for amplification and the optical multiplexer/demultiplexer are provided in the optical branching station, and the light for amplification is pumped into the backbone optical fiber from the optical multiplexer/demultiplexer toward the base station.

19. The PON system according to Claim 17, wherein

a second optical multiplexer/demultiplexer, a third optical multiplexer/demultiplexer, and an optical path connecting the second optical multiplexer/demultiplexer and the third optical multiplexer/demultiplexer are provided in the optical branching station,

the light for amplification that travels through a backbone optical fiber for an upstream signal is extracted from the second optical multiplexer/demultiplexer to be supplied to the third optical multiplexer/demultiplexer via the optical path, and

the light for amplification is pumped into a backbone optical fiber for a downstream signal from the third optical multiplexer/demultiplexer toward the base station.

20. The PON system according to Claim 13, wherein

the light source for amplification and the optical multiplexer/demultiplexer are provided in the optical branching station, and the light for amplification is pumped into the branch optical fiber by way of the passive optical divider toward the local station.

21. The PON system according to Claim 13, wherein

the light source for amplification and the optical multiplexer/demultiplexer are provided in the base station, and the light for amplification is pumped into the backbone optical fiber from the base station toward the optical branching station, and

a reflector that allows the light for amplification to undergo total reflection to the backbone optical fiber is provided in the optical branching station.

22. The PON system according to Claim 13, wherein

the light source for amplification and the optical multiplexer/demultiplexer are provided in the base station, and the light for amplification is pumped into the backbone optical fiber from the base station toward the optical branching station,

a second optical multiplexer/demultiplexer and a

reflector are provided in the optical branching station, and

the light for amplification that travels through the backbone optical fiber is extracted from the second optical multiplexer/demultiplexer, so that the light for amplification is allowed to undergo total reflection on the reflector.

23. The PON system according to Claim 13, wherein

the optical multiplexer/demultiplexer is provided in the optical branching station;

an optical fiber is provided between the base station and the optical branching station besides the backbone optical fiber, and

the light source for amplification is provided in the base station, and the light for amplification is supplied to the optical multiplexer/demultiplexer via the optical fiber, so that the light for amplification is pumped into the backbone optical fiber from the optical multiplexer/demultiplexer toward the base station.

24. The PON system according to any of Claims 17 through 23, wherein

a star coupler is used as the passive optical divider.

25. The PON system according to Claim 13, wherein

an optical fiber is provided between the base station and the optical branching station besides the backbone optical fiber, and

the light source for amplification is provided in the base station, so that the light for amplification is pumped into one optical path of the optical multiplexer/demultiplexer on the local station side via the optical fiber toward the base station.

26. The PON system according to any of Claims 17 through 23 and 25, wherein

an AWG (Arrayed-Waveguide Grating) capable of multiplexing and demultiplexing light using different wavelengths is used as the passive optical divider.